September 8, 2010

Note Title 9/8/2010

Intercepts

Example

$y = x^2 + 4$

x-interepts: $y = 0$

So

$$0 = x^2 + 4$$

Solve for x: $x^2 = -4$

x is not real!!

$\therefore$ No x-intercept.

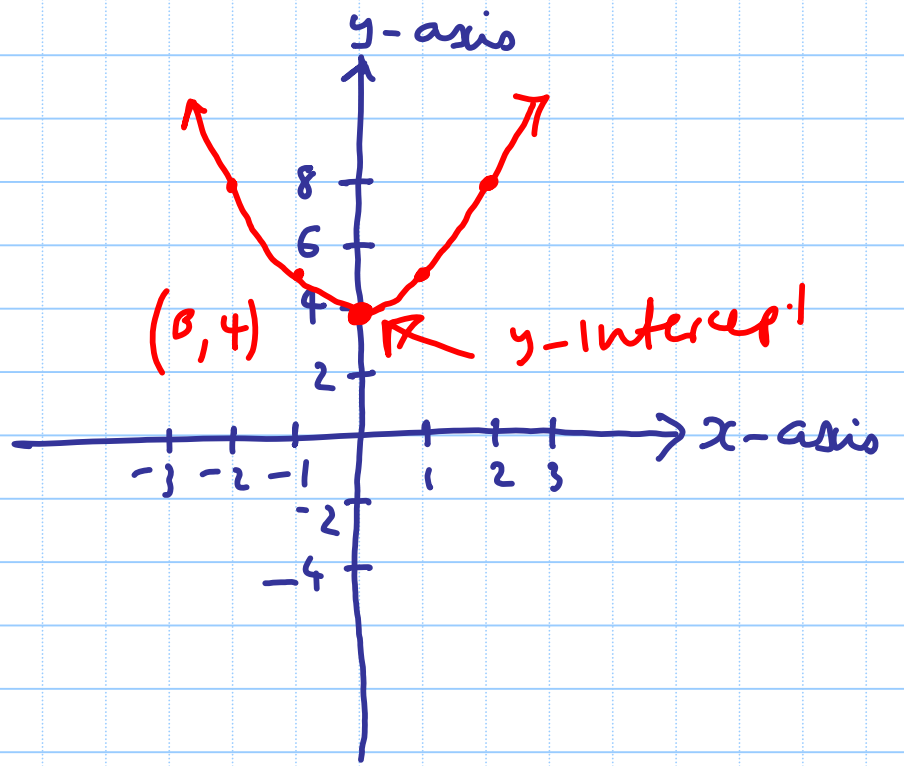
y- intercepts: $x = 0$

$y = x^2 + 4$

$y = 0^2 + 4$

$y = 4$

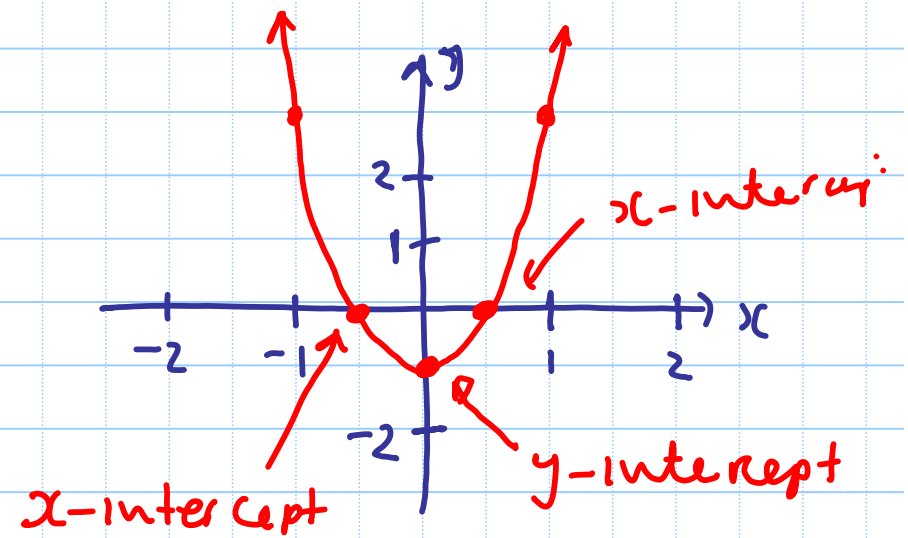
y- intercept $(0, 4)$



x	$y = x^2 + 4$	(x, y)
-2	8	$(-2, 8)$
-1	5	$(-1, 5)$
1	5	$(1, 5)$
2	8	$(2, 8)$

Examples

$y = 4x^2 - 1$



x-interepts: $y = 0$

$0 = 4x^2 - 1$

$4x^2 = 1$

$x^2 = \frac{1}{4}$

$x = \pm\frac{1}{2}$

x-interepts: $\left(-\frac{1}{2}, 0\right)$ & $\left(\frac{1}{2}, 0\right)$

y-interepts: $x = 0$

$y = 4(0^2) - 1 = -1$

$(0, -1)$

Example

$$y = \sqrt{x - 4}$$

x-intercept: $y = 0$

$$0 = \sqrt{x - 4}$$

$$0^2 = x - 4$$

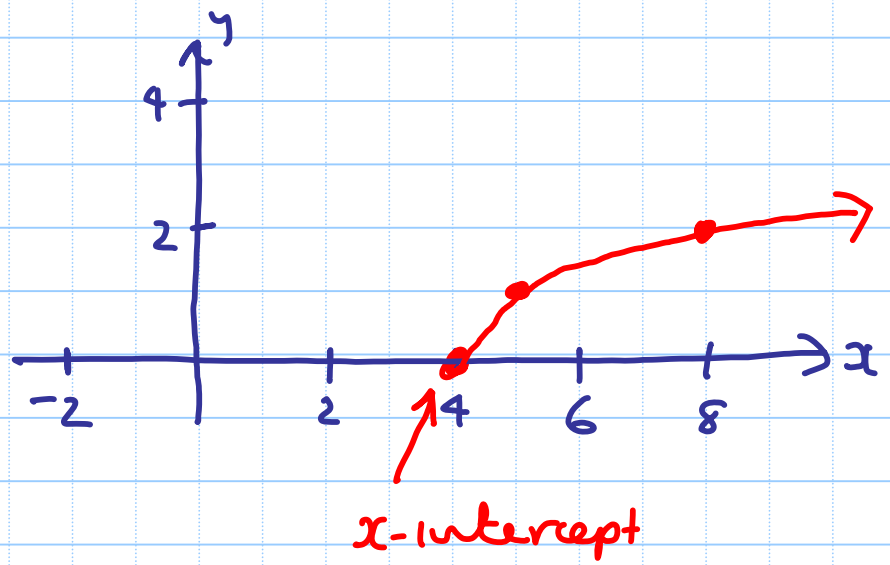
$$4 = x \qquad (4, 0)$$

y-intercept: $x = 0$

$$y = \sqrt{0 - 4}$$

$$= \sqrt{-4} \quad \text{Not real}$$

No y-intercept.



x	y	(x, y)
5	1	
8	2	

Example

$$y = \frac{1}{x^2+4}$$

$\frac{\text{Numerator}}{\text{Denominator}} = 0$

What can we conclude?

Numerator = 0

x-intercepts: $y = 0$

$$0 = \frac{1}{x^2+4}$$

No solution

$\therefore$ No x-intercept.

y-intercepts: $x = 0$

$$y = \frac{1}{0+4} = \frac{1}{4}$$

$\left(0, \frac{1}{4}\right)$